

Amendment to the Claims:

Applicants respectfully request that the claims in the subject patent application be amended as follows prior to examination. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- Claim 1 (Original) A catalyst having a macropore structure comprising mordenite zeolite having a silica to alumina molar ratio in the range of about 50:1 to about 105:1 and wherein the peak macropore diameter of the catalyst, measured by ASTM Test No. D 4284-03, is less than about 900 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram.
- Claim 2 (Original) The catalyst of claim 1 wherein the cumulative pore volume at pore diameters less than or equal to about 400 angstroms is less than or equal to about 0.30 milliliters per gram.
- Claim 3 (Original) The catalyst of claim 2 wherein the cumulative pore volume at pore diameters less than or equal to about 300 angstroms is less than or equal to about 0.25 milliliters per gram.

- Claim 4 (Original) The catalyst of claim 3 wherein the cumulative pore volume at pore diameters less than or equal to about 300 angstroms is less than to equal to about 0.20 milliliters per gram.
- Claim 5 (Original) The catalyst of claim 4 wherein the cumulative pore volume of the catalyst at pore diameters less than or equal to about 400 angstroms is in the range of about 0.05 milliliters per gram to about 0.18 milliliters per gram.
- Claim 6 (Original) The catalyst of claim 5 wherein the cumulative pore volume of the catalyst at pore diameters less than or equal to about 300 angstroms is in the range of about 0.08 milliliters per gram to about 0.16 milliliters per gram.
- Claim 7 (Original) The catalyst of claim 1 wherein the peak macropore diameter is in the range of about 400 angstroms to about 800 angstroms.
- Claim 8 (Original) The catalyst of claim 7 wherein the peak macropore diameter is in the range of about 400 angstroms to about 700 angstroms.
- Claim 9 (Original) The catalyst of claim 8 wherein the peak macropore diameter of the catalyst is in the range of about 450 angstroms to about 600 angstroms.

- Claim 10 (Original) The catalyst of claim 1 wherein the mordenite zeolite has a silica to alumina molar ratio of about 65:1 to about 95:1.
- Claim 11 (Original) The catalyst of claim 10 wherein the mordenite zeolite has a silica to alumina molar ratio of about 75:1 to about 90:1.
- Claim 12 (Original) The catalyst of claim 1 wherein the catalyst is in the form of a tablet.
- Claim 13 (Original) A catalyst composite comprising:
- (a) the catalyst of claim 1; and
 - (b) a binder.
- Claim 14 (Original) The catalyst composite of claim 13 wherein the binder is a suitable inorganic material.
- Claim 15 (Original) The catalyst composite of claim 14 wherein the binder is alumina.
- Claim 16 (Original) The catalyst composite of claim 13 wherein the mordenite zeolite is present in the range of about 50 weight percent to about 99 weight percent based on the total dry weight of the catalyst composite.
- Claim 17 (Original) The catalyst composite of claim 16 wherein the mordenite zeolite is present in the range of about 60 weight percent

to about 90 weight percent based on the total dry weight of the catalyst composite.

- Claim 18 (Original) A catalyst composite prepared by the process of claim 13.
- Claim 19 (Currently amended) A process for preparing a catalyst composite wherein the peak macropore diameter of the catalyst, measured by ASTM Test No. D 4284-03, is less than about 900 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram, comprising:
- (a) contacting a mordenite zeolite having a silica to alumina molar ratio in the range of about 50:1 to about 105:1 with a binder in the presence of volatiles to form a mixture wherein the weight percent of mordenite zeolite is in the range of about 50 to about 99 based on the total dry weight of the resulting catalyst composite, and wherein the volatiles in the mixture are in the range of about 30 weight percent to about 70 weight percent of the mixture;
 - (b) shaping the mixture to form a composite;
 - (c) drying the composite; and
 - (d) calcining the composite in a substantially dry environment.

- Claim 20 (Original) The process of claim 19 wherein in step (b) shaping comprises extruding.
- Claim 21 (Original) The process of claim 19 wherein in step (a) the weight percent of mordenite zeolite is in the range of about 60 to about 90 based on the total weight of the mixture.
- Claim 22 (Original) The process of claim 19 wherein the binder in step (a) is a suitable inorganic material.
- Claim 23 (Original) The process of claim 22 wherein the binder is alumina.
- Claim 24 (Original) The process of claim 19 wherein in step (a) the volatiles in the mixture are present in the range of about 35 weight percent to about 50 weight percent of the mixture.
- Claim 25 (Original) The process of claim 24 wherein the volatiles comprise water and an acid.
- Claim 26 (Original) A catalyst composite prepared by the process of claim 19.

- Claim 27 (Currently Amended) A process for producing an alkylated aromatic composition comprising:
- contacting at least one aromatic hydrocarbon with at least one olefin under alkylation conditions in the presence of the catalyst composite of claim 13.
- Claim 28 (Original) The process of claim 27 further comprising a step wherein the catalyst composite is reactivated with an aromatic hydrocarbon flush.
- Claim 29 (Original) The process step of claim 28 wherein the catalyst composite is reactivated with a benzene flush.
- Claim 30 (Original) A process for preparing an alkylated aromatic composition comprising:
- contacting at least one aromatic hydrocarbon with at least one olefin under alkylation conditions in the presence of a catalyst having a macropore structure comprising mordenite zeolite having a silica to alumina molar ratio in the range of about 50:1 to about 105:1 wherein the peak macropore diameter, measured by ASTM Test No. D 4284-03, is less than about 900 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram.

- Claim 31 (Original) The process of claim 30 further comprising a step wherein the catalyst composite is reactivated with an aromatic hydrocarbon flush.
- Claim 32 (Original) The process step of claim 31 wherein the catalyst composite is reactivated with a benzene flush.
- Claim 33 (Original) The process of claim 30 wherein the aromatic hydrocarbon is benzene or toluene.
- Claim 34 (Original) The process of claim 33 wherein the olefin is an alpha olefin, an isomerized olefin, a branched-chain olefin or mixtures thereof.
- Claim 35 (Original) The process of claim 34 wherein the olefin has from about 4 carbon atoms to about 80 carbon atoms.
- Claim 36 (Original) The process of claim 34 wherein the alpha olefin or the isomerized olefin has from about 6 carbon atoms to about 60 carbon atoms.
- Claim 37 (Original) The process of claim 36 wherein alpha olefin or the isomerized olefin has from about 20 carbon atoms to about 40 carbon atoms.
- Claim 38 (Original) The process of claim 34 wherein the branched-chain olefin has from about 6 carbon atoms to about 70 carbon atoms.

- Claim 39 (Original) The process of claim 38 wherein the branched-chain olefin has from about 8 carbon atoms to about 50 carbon atoms.
- Claim 40 (Original) The process of claim 39 wherein the branched-chain olefin has from about 12 carbon atoms to about 18 carbon atoms.
- Claim 41 (Original) The process of claim 34 wherein the olefin is a partially-branched-chain isomerized olefin wherein the olefin has from about 6 carbon atoms to about 40 carbon atoms.
- Claim 42 (Original) The process of claim 41 wherein the partially-branched-chain isomerized olefin has from about 20 carbon atoms to about 40 carbon atoms.
- Claim 43 (Original) The process of claim 27 further characterized by an increase of at least 50 hours in the alkylation run length time compared to mordenite catalysts having a peak macropore diameter greater than 900 angstroms and a cumulative pore volume at pore diameters less than or equal to 300 angstroms is greater than 0.30 milliliters per gram.
- Claim 44 (Original) The process of claim 43 wherein the increase in the alkylation run length time compared to mordenite catalysts having a silica to alumina molar ratio less than 50:1 and greater than 105:1 and having a peak macropore diameter greater than 900 angstroms and a cumulative pore volume at pore diameters less than or equal to 300 angstroms greater than 0.3 milliliters per gram is at least 75 hours.

- Claim 45 (Original) The process of claim 44 wherein the increase in the alkylation run length time compared to mordenite catalysts having a silica to alumina molar ratio less than 50:1 and greater than 105:1 and having a peak macropore diameter greater than 900 angstroms and a cumulative pore volume at pore diameters less than or equal to 300 angstroms greater than 0.3 milliliters per gram is at least 100 hours.
- Claim 46 (Original) The process of claim 30 further characterized by an increase of at least 50 hours in the alkylation run length time compared to mordenite catalysts having a silica to alumina molar ratio less than 50:1 and greater than 105:1 and having a peak macropore diameter greater than 900 angstroms and a cumulative pore volume at pore diameters less than or equal to 300 angstroms greater than 0.3 milliliters per gram.
- Claim 47 (Original) The process of claim 46 wherein the increase in the alkylation run length time compared to mordenite catalysts having a silica to alumina molar ratio less than 50:1 and greater than 105:1 and having a peak macropore diameter greater than 900 angstroms and a cumulative pore volume at pore diameters less than or equal to 300 angstroms greater than 0.3 milliliters per gram is at least 75 hours.
- Claim 48 (Original) The process of claim 47 wherein the increase in the alkylation run length time compared to mordenite catalysts having a silica to alumina molar ratio less than 50:1 and greater than 105:1

and having a peak macropore diameter greater than 900 angstroms and a cumulative pore volume at pore diameters less than or equal to 300 angstroms greater than 0.3 milliliters per gram is at least 100 hours.